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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

GEORGE, PATRICIA ANN

ART UNIT PAPER NUMBER

1765

DATE MAILED: 06/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/829,392

Applicant(s)

WAGNER ET AL.

Examiner

Patricia A. George

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 11-23, 25, and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group 1, claims 1-10, 24, 26, and 28-29 in the reply filed on 3/31/06 is acknowledged. The traversal is on the ground(s) that applicant does not agree with the grounds for the apparatus can practice another materially different process. The inventions are distinct and acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper. In response, a clarification on the reasons for distinctness is set forth. With respect to groups I and II, the process as claimed can be practiced with a materially different apparatus, such as a plasma etcher. With respect to groups I and III, the products claimed can be made by a materially different process such as, plasma etching a masked area to remove the substrate, thereby forming a pattern.

Claims 11-23, 25, and 27 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected group, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 3/31/06.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6-10, 24, 26, and 28-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Rizvi et al. (Direct manufacture of Miniature Bio-Particle Electro-manipulator Devices using Excimer Laser Mask Projection Techniques; 1998; Exitech Limited, Long Hanborough, Oxford OX8 8Lh, UK) evidenced by Knowles et al. (Micromachining of Metals, Ceramics, Silicon and Polymers using Nanosecond Lasers) and Lumonics (Lumonics INDEX: Excimer Lasers for Industry).

Rizvi et al. anticipated a method for removing the edge region of a layer (see figure 1a) applied to a substrate (see fig. 1b) used in a microlithographic process (see fig. 2), by imaging a laser beam (see fig. 2) onto the layer applied to the substrate (see fig. 1b). Rizvi et al. teaches use of laser ablation for masked/unmasked removal of patterned areas on a substrate. Ablation involves evaporation, the method of applicants' limitation of claim 1. (See evidence of ablation involving evaporation in the abstract of Micromachining of Metals, Ceramics, Silicon and Polymers using Nanosecond Lasers, by Knowles et al.)

As for claim 2, Rizvi et al. teaches the laser beam is focused in the form of a point, by imaging (see fig. 2).

As for claim 3, Rizvi et al. teaches the beam is imaged in a manner that is incident on the surface in an essentially perpendicular direction (see fig. 1a).

As for claim 4, Rizvi et al. teaches the laser beam is incident on the plane spanned by the substrate that is in a tangential direction which is substantially parallel (see fig. 2).

As for claim 6, Rizvi et al. teaches the layer comprises a coating of polyimide (see page 4, second column, paragraph stating with "Having..."), a known photoresist, on multilevel thin film devices (see abstract) which are commonly known to be manufacture on wafers which are round.

As for claim 7, Rizvi et al. teaches the substrate and laser are moved relative to each other, while the laser scans the region (see fig. 2).

As for claim 8, Rizvi et al. teaches the region is optically scanned to adapt and regulate the removal of the desired area (see fig. 2).

As for claim 9, Rizvi et al. teaches an projection lens (i.e. aperature) which prevents the laser from imaging regions other than the desired region (see fig. 2).

As for claim 10, see discussion toward claim1 above.

As for claim 24, Rizvi et al. teaches the laser beam is focused in the form of a line (see fig. 1a).

As for claims 26 and 28, Rizvi et al. teaches the beam is focused by means of a projection lens (see page 2 line 7), which is cylindrical (see fig. 2).

As for claim 29, Rizvi et al. teaches use of a micromachining system which operates a 248nm KrF excimer laser (see page two, column 2, paragraph 2). 248nm KrF excimer lasers are rate by manufacturer having the average power normally in the range of 10 watts to 100 watts, which encompasses and overlaps applicants' claimed

range. (see page 1, section "What is an Excimer Laser?", of Lumonics INDEX Excimer Lasers for industry, for evidence of said power rating.)

It is noted that the reference of Rizvi et al. is silent about the occurrence of "evaporation". However, evaporation would inherently occur because the same step that is responsible for evaporation (i.e. ablation with laser beam) is occurring. The reference of Knowles et al. (Micromachining of Metals, Ceramics, Silicon and Polymers using Nanosecond Lasers) evidences the fact that laser ablation is known to cause evaporation. See the abstract of Knowles et al., where it is taught, it is usual for ablation to be a combination of evaporation.

Claim Rejections - 35 USC § 103

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rizvi et al. as applied to claim 1 above, and further in view of Quentel et al. (Multilevel diffractive optical element manufacture by excimer laser ablation and halftone masks), evidenced Lumonics (Lumonics, INDEX: Excimer Lasers for industry).

Rizvi et al. is silent as to the particles being removed by being blown or vacuumed from the region, as in claim 5.

Quentel et al. teaches reduction of particle redeposition by blowing air at the surface of the sample during ablation (see last sentence of section 3).

It would have been obvious to one of ordinary skill in the art at the time of invention was made, to include that air blown at the surface of the workpiece during ablation, as Quentel, when removing particles from the region of laser treatment, as in

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Rizvi et al., because Quentel et al. teaches doing so will reduce the particle redeposited on the surface (i.e. reduce particulate contamination), known to reduce defects.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia A. George whose telephone number is (571)272-5955. The examiner can normally be reached on weekdays between 7:00am and 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


PAG
05/06

Patricia A George
Examiner
Art Unit 1765


NADINE G. NORTON
SUPERVISORY PATENT EXAMINER